Math Sample Activities*

Standard: The adult learner develops and applies math strategies to a variety of situations.

Indicator A: Develops and applies number sense to solve a variety of real-life problems and to determine if the results are reasonable

	Family	Workplace	Community
Pre-Literacy	Families play board games that require players to add and subtract whole numbers to move along game path to goal.	Students play the role of a drug store customer and make purchases with correct bills and coins.	Students look through magazines and newspapers for ads. Write numerals to match number words and vice versa.
ABE I	Families play board games that require players to use basic operations with whole numbers to move along game path to goal. Students learn how to use a calculator.	Students estimate to evaluate the reasonableness of a solution produced by a calculator or cash register.	Students write a weekly grocery list of items to be purchased. Estimate the cost.
ABE II	When dividing a pizza or cake for family and communicating about the parts of the whole, students use fraction names to indicate the part.	Students inventory items at their workplace that total approximately $10,000.	Students estimate the total number of cars that pass through the busiest intersection in their community in an hour. Students record the number and compare the result with their prediction.

ABE III	Using mixed numbers, students express the amount of money their family spends yearly on rent, food, entertainment, etc.	Students determine what percent or fraction of paycheck is paid in various taxes and deductions.	Students communicate a personal representation of the relative size of large numbers used in city, county, or school district budgets.
ASE I/ GED	Students evaluate advantages and disadvantages of purchasing a home or renting an apartment.	Students collect information from various businesses where individuals work about prices of goods. Determine best buys and provide reasons.	Students evaluate the personal costs including time and money of recycling cans, the amount received in payment, and the environmental effects. Students share with others various strategies for determining taxes and tips on a restaurant bill.
ASE II	Students use grocery receipts to find examples of the commutative, associative, distributive, identity, inverse, and/or closure properties.	Students use inventory or balance sheets or invoices to find examples of whole numbers, integers, rational, and/or irrational numbers.	Students simulate a neighborhood or school improvement project by outlining the problems in achieving the goal and the technical information needed to solve the problems.

***Sample activities incorporate the core competencies of communication, interpersonal and critical-thinking skills.**

INDICATOR B: Applies data collection, data analysis, and probability to interpret, predict, and/or solve real-life problems

	Family	Workplace	Community
Pre-Literacy	Students conduct a simple survey among family members.	Students conduct a simple survey at the workplace.	Students conduct a simple survey among class members.
ABE I	Students use the Internet to plan a trip (e.g., calculate miles, expenses).	Students determine the number of gallons of paint needed to paint a room.	Students estimate and compare the weight of classroom objects.
ABE II	Students create a pictograph or bar graph which represents the amount of silverware in their kitchen.	Students identify 3 outcomes that are most likely, less likely, or equally likely to occur at your workplace tomorrow.	Students describe how they would choose a sample of people in their neighborhood to ask about for whom they would vote in an upcoming election.

ABE III	Students measure height and weight of each family member. Make chart. Find average, mean, range and mode.	Students develop a scale model of work area to determine alternative furniture arrangement.	Students compare and report on the temperatures of various cities using the weather charts from various newspapers.
ASE I/GED	Students graph or chart the calories and fat content of a family's favorite foods eaten in one week. Students measure a room in their house to determine and compare the total cost of various types of floor coverings.	Students use established bus routes and schedules to determine and calculate distances and time spent traveling between home and the workplace.	Students develop a possible ride-share program for the class. Measure distance, times, and routes from home to school. Students use Internet to find distances to the moon, sun, distance around the earth and express in scientific notation.
ASE II	Students gather information on children's heights in the neighborhood and determine whether the distribution of heights fits a normal curve.	Students construct a pie graph of job classifications at the workplace.	Students evaluate magazine or newspaper polls for bias in sampling procedures.

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Indicator C: Applies algebraic concepts and methods to explore, analyze or solve real-life problems

	Family	**Workplace**	**Community**
Pre-Literacy	Students work a jigsaw puzzle.	Students match patterns while hanging wallpaper.	Students determine the side of a street for a particular address.
ABE I	Students bring in samples of wallpaper patterns to class. Describe patterns. Create their own wallpaper using patterns.	Students establish a number line to determine when a project will be completed.	Students examine the scores of students over a year and determine a pattern.
ABE II	Students describe in written form the pattern in a decoration of an item in their home.	Students sort and classify according to observable attributes 50 objects at their workplace.	Students use *all*, *none*, *some*, and *many* to make reasonable statements about cites in Arizona.
ABE III	Students plan a trip to Disneyland. Calculate how long it will take to get there at differing rates of speed. Students use a calculator to figure square roots or percents.	Students examine and predict hiring trends based on historical data for their city. Students figure out the simple interest for a new company car.	Students determine number of bleachers necessary to accommodate a specific number of spectators at a local sports field.

ASE I/GED	Students chart current ages of their family and determine how old each family member will be in the year 2010. Students use signed numbers to explain credit card usage to family members.	Students develop and solve algebraic equations using simulated work situations. Students determine the hourly rate of pay when given a contract rate (yearly salary) for several employees.	Students make a Battleship board game using a four quadrant grid.
ASE II	Students make up riddles involving family members' ages using inequalities. For example: Who in the family is older than 2 and younger than 10? $X > 2$ and $X < 10$; $2 < X < 10$	Students assume employees are to plan and construct a 12 square foot flower garden to beautify the workplace. What shape would be "best"? Consider the relationships between area, length, width, perimeter, radius, and circumference. Graph some of the relationships.	Students compare the slopes of several handicap access ramps in the community. Evaluate for ease of use.

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Indicator D: Uses geometric properties, relationships and methods to identify, analyze and solve real-life problems

	Family	Workplace	Community
Pre-Literacy	Students identify shapes of baking dishes.	Students identify flat and solid objects found in the workplace.	Students explore classroom and label geometric shaped objects.
ABE I	Students form different geometric shapes in various colors in home and bring to class for discussion (compare & contrast). Students use different geometric shapes to create a family history mobile.	Students find and record as many examples of intersecting, parallel, and perpendicular lines in their immediate workplace.	Students compare the different roof styles in their community.
ABE II	Students compare and contrast the characteristics of simple polygons in one room in their home.	Students compare and contrast characteristics of simple solid geometric figures in your workplace.	Students identify streets in their neighborhood that intersect, are parallel, or are perpendicular.

ABE III	Students describe the type of house they live in if there are no right angles. Students draw a symmetrical design for their home.	Students poll co-workers to determine most popular size and shape of purse and/or wallet.	Students measure the angles of streets on a map that do not intersect at right angles.
ASE I/GED	Students design a model home. Determine how many geometric shapes make up the design. Students compare cost of building using complex geometric designs versus simple rectangular shapes (e.g., cost of hexagonal vs. rectangular foundation or frame).	Students determine how many trapezoid tables will be needed for a meeting in a given room. Students use appropriate formula to determine area of an office.	Students interview an architect to determine the best geometric design for a community center. Students draw a scale model of a parking lot in their community including parking and open spaces.
ASE II	Students investigate patio or floor tiling for geometric shapes and transformations. Design their own.	Students build an argument and draw conclusions relating to a needed change in the workplace environment.	Students enlarge or reduce a drawing through the use of a grid overlay and dilation or reduction.

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Indicator E: Applies knowledge of standard measurements to real-life situations

	Family	Workplace	Community

Pre-Literacy	Students list children and their ages.	Students create a picture file of tools needed for job.	Students survey class members to determine mode of transportation to class.
ABE I	Students discuss graph appearing in newspaper with children.	Students read and summarize table, chart or graph relating to profits and losses of a company.	Students make a graph of modes of transportation from data collected. Discuss with class.
ABE II	Students measure approximately how many square feet of carpet it would take to cover all the floors in their home.	Students estimate approximately how many hours and minutes they spend working at their job each year.	Students calculate the average high temperature of their locality for one calendar month.
ABE III	Students determine average monthly amount spent on electricity.	Students evaluate the range of wages paid for specific job positions within the workplace.	Students discuss probability of winning the lottery.
ASE I/GED	Students construct a pie graph of monthly family spending and evaluate. Use computer spreadsheet if available.	Students collect information on work environment changes desired by employees and organize it into a graphic presentation. Use computer spreadsheet if available.	Students write a letter to the school district arguing for or against changes in a school calendar based on test data on student learning. Use word processing software if available. Students use information from newspaper to evaluate changes in city spending for parks and recreation, welfare and roads.

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Indicator F: Uses both inductive and deductive reasoning in making conjectures and testing the validity of arguments

	Family	**Workplace**	**Community**
ASE II	Students devise a Venn diagram showing familial relationships. For example, these may include maternal and paternal generational relationships or gender relationships in the immediate family.	Students invent an alternative system for adding a column of numbers without the use of a calculator.	Students analyze an argument presented in a newspaper or magazine article or in a news or TV broadcast.

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